

Increasing Influenza Immunization Rates at a Homeless Clinic Through Staff Education.

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### Abstract:

**Background:** Healthy People 2020, a government organization that sets health goals for the United States, has established the benchmark objective of 70% influenza vaccination coverage. National trends show immunization rates are a dismal 41.7% for the adult population. Persons experiencing homelessness are a vulnerable population in which access to preventative health care services is lacking. Prevention of acute illness, whenever possible, is crucial to maintaining the health of this population. The purpose of this project is to increase influenza vaccinations through staff education at a homeless clinic.

**Methods:** Eighty-eight volunteer staff, at a student led homeless clinic, received education on the influenza vaccinations. The education occurred at the first orientation meeting of the fall semester in 2016 and consisted of; the importance of immunizations, goals of Healthy People 2020, and an emphasis on addressing patient objections. The effectiveness of the program compared the percentage of patients immunized from August - December 2016 to 2015.

**Results:** Post intervention, 44% of the clinic patients were immunized against influenza, compared to 18% (pre-intervention). This finding resulted in a statistically significant increase in vaccinations ( $Z = -5.513$ ,  $p = < .001$ , Wilcoxon signed rank test). Eighty-eight volunteers were present at the influenza vaccination educational intervention and 82 returned their surveys (response rate 93%). The average score of the posttest was 96% (range 70-100%).

**Conclusions:** These findings support staff education on influenza vaccinations as a strategy for increasing vaccination in the homeless population. Such interventions provide promise to increase influenza vaccinations, however, they fall short of meeting the goals of Healthy People 2020. Identifying innovative interventions is critical to meet the goals of Healthy People 2020.

*Keywords:* influenza, vaccination, homeless, education, Healthy People 2020

Acute respiratory infections are the 8<sup>th</sup> leading cause of death in the United States (Healthy People 2020, 2015, para. 8). Healthy People 2020 (2015, para. 8) report annual complications from influenza contribute to 36,000 deaths and over 200,000 hospitalizations in the United States. In 2010, the Center for Disease Control (CDC) expanded the recommendation for influenza vaccination to include all persons over 6 months of age (Center for Disease Control [CDC], 2016). Fiore et al. (2010) claim that all age groups realize potential benefit when influenza immunization is also recommended for adults age 19-49. Since expanding the recommendation in 2010, influenza vaccination in the state of Arizona has remained unchanged, at 41.5% (CDC, 2016, figure 1). The CDC (2016, figure 3) reports the state of Arizona is ranked 7<sup>th</sup> in the nation as having one of the lowest influenza vaccination rates. The goal set forth by Healthy People 2020 (2015, figure IID-12.12) is to increase influenza vaccination rates to 70% nationwide. Consequently, practitioners must devise evidence-based interventions to increase vaccine uptake within their clinics and community.

### **Background and Significance**

Increased influenza vaccination in the United States may prove especially effective among certain high-risk populations, including those experiencing homelessness. Hauff and Secor-Turner (2014) describe how homelessness, in particular, increases the risk of complications and mortality from acute and chronic diseases. Often, chronic diseases remain untreated or undiagnosed due to lack of continuity of care, inability to pay, or lost and stolen medications (Hauff & Secor-Turner, 2014). Previously treated medical conditions are often exacerbated in shelters, which increases the possibility of complications from acute conditions (Hauff & Secor-Turner, 2014).

Health care workers report that the needs of persons experiencing homelessness tend to revolve around acute communicable disease due to the synergy of dorm-style living conditions and worsening chronic conditions (Hauff & Secor-Turner, 2014). For prevention of such acute communicable respiratory conditions, vaccination against influenza may be the most effective strategy. While tracking influenza immunization rates in the homeless population is a difficult endeavor, research suggests a strong possibility less than 25% of the demographic is vaccinated (Metcalf & Sexton, 2013, page 175). This has led to the clinically relevant PICOT question, “In health care professionals, how does provider based education, compared to no education affect the rate of influenza vaccinations at a homeless clinic during the 2016 flu season?”

### **Search Strategy**

An exhaustive search was performed to obtain evidence for the clinically relevant PICOT question stated above. The search included the following databases: Cumulative Index to Nursing and Allied Health Literature (CINAHL), Ovid MEDLINE, and Cochrane Database of Systematic Reviews.

The CINAHL database search included the keywords: “vaccine”, “influenza”, and “education”. All terms were searched with the inclusion limits: peer reviewed, journal articles, adults, and published between 2011-2016. Exclusion criteria included: patient education, pregnancy, pneumococcal, and cancer. This search produced 34 articles, all of which were reviewed to be included in the final yield. Thirty-two articles did not pertain to the research question. Two articles were included that did directly answer the research question and were included in the final yield.

Medline and The Cochrane Database were searched using keywords: “vaccine”, “influenza”, “education”, and “provider”. Inclusion search criteria for these databases are:

publication between 2011-2016, peer reviewed, and in the English language. Medline produced a yield of 89 research articles. Exclusion criteria for the final yield: patient education, pregnancy, pneumococcal, and HPV vaccination. After review of the articles, four directly answered the PICOT question and were included in the final yield. The Cochrane Database yielded a result of 17 out of 101,039 records. None of these directly answered the PICO question as the reviews contain information on patient education, not provider education. Three research articles were identified from the reference lists of the final yield and were retrieved by Google Scholar.

### **Evidence Synthesis**

One of the strongest predictors of influenza immunization is a recommendation by a health care professional (HCP) (Pandolfi et al., 2012). Research shows that providers with a high level of vaccine knowledge are significantly more likely to recommend the influenza vaccination (Afonso, Cavanagh, & Swanberg, 2013; Donaghue, Szpunar, & Saravolatz, 2015; Zhang, White, & Norman, 2011). Studies indicate HCP have basic knowledge about the vaccine, however, many lack understanding of the vaccine and its potential side effects. (Nowak, Sheedy, Bursey, Smith, & Basket, 2015; Quinn, 2014). Zhang et al. (2011) report that HCP who have never received the influenza vaccine have lower influenza knowledge rates compared to those who have received the vaccine.

A systematic review of HCP's acceptance of the influenza vaccine consistently demonstrates their concern over safety and that the vaccine would actually cause the disease it was meant to prevent (Vasilevska, Ku, & Fisman, 2014). When HCP's are educated on the myths, effectiveness of the immunization, and vaccine safety, there is a positive shift in attitudes toward vaccination and a significant increase in immunization recommendations (Afonso et al.,

2013; Donaghue et al., 2015. Quinn (2014) found that delivery of this education is best face-to-face and from a trusted colleague.

Persons experiencing homelessness are a high-risk population due to their nomadic lifestyle and close living quarters (Buccieri & Gaetz, 2013). Research suggests that mistrust of HCPs is the number one reason persons experiencing homelessness do not seek care (O'Toole, Johnson, Redihan, Borgia, & Rose, 2015). Due to their nomadic lifestyle, forming a trusting relationship with a HCP can prove difficult, therefore, properly educating HCP and non-provider staff on common misconceptions may help to overcome objections and trust issues surrounding immunization.

### **Purpose**

Should vaccine programs at the SHOW clinic remain the same, the influenza vaccination rate for the coming flu season will likely result in the continuation of low immunization rates. Initiating this project could potentially increase the number of influenza immunizations, prevent the spread of the virus, and decrease complications from influenza. The purpose of this project is to determine if an educational intervention for both HCPs and non-provider staff increases influenza vaccination rates at a homeless clinic.

### **Evidence Based Practice Model**

The model chosen to guide the implementation of the evidence is the Model for Evidence-Based Practice Change by Rosswurm and Larrabee (1999). The model exhibits a six step guide to practice change which includes: assess the need for change, locate the evidence, critically appraise and synthesize the evidence, design the implementation, implement and evaluate the change, integrate and maintain change, and then continue to assess for further needs of change in practice (Rosswurm & Larrabee, 1999). The process allows for continued growth

and may continue, if warranted, to refine current practice. This model provides a logical flow and clearly identifies the steps needed to implement a practice change.

### **Conceptual/Theoretical Model**

The conceptual model chosen to guide the project is the PRECEDE-PROCEED Model, which provides the structure to implement health education programs and interventions (Pender, Murdaugh, & Parsons, 2015). The model is comprised of two components: PRECEDE (policy and educational assessment) and PROCEED (implementation and evaluation). This model utilizes an 8-step process: 1) community assessment, 2) an epidemiologic assessment, 3) an educational assessment, 4) policy assessment and intervention alignment, 5) implementation of the intervention, (6-8) impact and outcomes (Pender et al., 2015, p. 65-66).

### **Methods**

A Doctoral of Nursing Practice (DNP) student, who is also a volunteer at SHOW, provided the HCP and “non-provider” volunteer staff education, and evaluated the impact of influenza vaccination given at a homeless clinic post intervention. The DNP student distributed a posttest to demonstrate understanding of the information provided. The Arizona State University Institutional Review Board found the protocol exempt and approved the study on 8/15/2016.

### **Setting**

Saturday mornings, Student Health Outreach for Wellness (SHOW) utilizes the Healthcare for the Homeless building to provide basic medical and psychiatric services (SHOW, 2016). The SHOW clinic is a student run interdisciplinary, integrated primary care clinic that provides free care to underserved populations. Care is delivered via interdisciplinary teams, which are comprised of nursing, medical, audiology, speech pathology, occupational therapy, social work, physical therapy, and undergraduate student navigators. Teams consist of both

students and board certified practitioners. Currently, the SHOW clinic is providing free influenza immunizations to patients as they are seen for services. Many times however, the opportunity is missed due to acute and chronic conditions taking precedence over the provider's time. The SHOW clinic received 200 free influenza vaccinations during the 2015-16 flu seasons from Healthcare for the Homeless (HCH). More than halfway through the season, SHOW's nursing director reported that only a quarter of the supply had been utilized (personal communication, 2016). Currently, the SHOW clinic does not have any system in place for education on the influenza vaccine for their HCP and non-provider patient navigators.

### **Educational Intervention**

An inclusion criterion for the educational intervention was being a volunteer for the SHOW clinic, both direct and indirect health care providers during the fall semester 2016. Volunteers commit to a rotation and are assigned to a team that provides care one Saturday a month for a total of 4 shifts in the semester. The first shift for each team starts an hour earlier with a mandatory clinic orientation. The influenza education program and posttest were offered during volunteer orientation on August 27, September 3, 10, and 17<sup>th</sup> of 2016. Halfway through clinic orientation, participants listen to a 15-minute PowerPoint on influenza and the vaccine. Attendance at the educational program is mandatory however; participation in the posttest was voluntary. Volunteers were instructed that a completed posttest served as their consent to the project.

The education intervention was based on information and misconceptions stated by the CDC and ample time was given for presentation and discussion (CDC, 2015). Education included: signs and symptoms of the flu, complications from the flu, people at high risk from the flu, common misconceptions of the flu, preventing, diagnosis, and treating the flu (CDC, 2015).



Approximately half of the education addressed misconceptions about the flu vaccine as many misconceptions surrounding the influenza vaccine circulate within the community and with HCPs (Nowak et al., 2015).

### **Survey Instrument**

An extensive search of multiple databases including: CINHALL, ERIC, Medline, and HaPI did not produce a valid or reliable instrument pertinent to influenza vaccination education. The CDC offered influenza quizzes however, they were constructed for the layperson and not for HCP's (CDC, 2016). Therefore, as the survey was designed, a literature search was performed on influenza education for HCP to ensure content validity. Several sites provide education on influenza, however, most reference the CDC as the source. Therefore, all content obtained for this project is directly from the CDC website (CDC, 2016) The survey is a 10-question true/false questionnaire, devised by the project leader, from direct statements made by the CDC.

The DNP student will administer the posttest to the volunteers to demonstrate understanding of the content provided and will serve as consent to the project. Random numbers on the posttest identified the participants and no personal data was obtained. Additional data collected on the posttest-include provider's specialty and age.

### **Vaccination Program**

Fall 2015 logs for all influenza vaccines given at the SHOW clinic were obtained for post intervention comparison. No patient identifiers were on these logs, only the vaccine information. The log sheet was stored online in a SHOW specific Google doc and was used to determine the number of post intervention vaccinations given. Documentation of the immunization is recorded both in the EMR and on the influenza log sheet.

Influenza vaccines were provided by HCH to be given by SHOW free of charge. The influenza vaccine is an inactivated trivalent vaccine from a multi dose vial. Any students that administer the vaccine will be required to have passed their injection administration and technique course within their program specialty. Preceptors for each specialty are available for oversight and observation. Immunization distribution began on August 27<sup>th</sup> and continued until December 17<sup>th</sup> 2016. One hundred and eighty seven patients were seen at SHOW in 2015; therefore, the first 187 patients seen in the clinic in 2016 will be used for comparison.

### **Outcomes**

There are two main outcomes measured in this project. The first is the volunteers' ability to demonstrate understanding of the information presented. The post-tests are graded on a scale of 0-100% and it is predetermined that a grade of 80% or better will demonstrate understanding of the information. The second outcome is to measure the change in the percentage of influenza vaccinations given over the previous year. A review of the 2015 SHOW clinic influenza vaccination log was used as the source for retrospective data. The number of influenza vaccinations given divided by the total number of patients seen, provided the percentage immunized.

### **Statistical Analysis**

All data was entered and analyzed using SPSS. Comparisons between the vaccinated versus not vaccinated groups were made using a non-parametric statistical test, Wilcoxon signed rank test. Wilcoxon was chosen over the paired t-test as the sample cannot be assumed normally distributed and the data is ordinal, not nominal. The level of statistical significance was set at 0.05. Posttest results were analyzed by frequency distribution.

## Results

The Wilcoxon signed rank test examined the number of immunizations given pre and post educational intervention and in comparison from year 2015 to year 2016. A statistically significant difference was found in the results ( $Z = -5.513$ ,  $p = < .001$ ). In 2015, 18% of SHOW clinic patients were immunized against influenza compared to 44% in 2016.

In total, 88 volunteers attended the influenza education and 82 completed the posttest (response rate 93%). Full ranges of clinical specialties were represented in the sample broken down by direct patient care providers (71%) and non-provider volunteers (29%). The average score for the posttest was 96%, which exceeded the 80% designated to determine comprehension of the material.

## Discussion

Evidence based interventions are needed to increase influenza immunization rates to meet the goals of Healthy People 2020. This project sought to determine if a volunteer (HCP and non-HCP staff) based education increased influenza vaccination rates in the homeless population. Findings show that this intervention resulted in a significant increase of influenza immunizations.

Interestingly, educating non-HCP staff appears to have an impact on immunization rates. Twenty nine percent of the intervention group were undergraduate patient navigators (non-HCP). The patient navigators accompany the patients throughout their visit and often have extra time to talk with the patients. As a result of the interventional education, many reported to the project manager that they felt more equipped to ask about influenza vaccination and to handle their objections. The direct patient care providers also reported spending less exam time to discuss influenza immunization, as many patients had already discussed with the patient navigators.

Anecdotally, the number immunized decreased during the weeks the DNP student leading the project was not available in clinic. The average immunizations fell from 6.1 per shift to 1.3 per shift. This drop could be linked to the project leader not being available, or to the fact it was later in the season and some had already been vaccinated by HCH. In order to identify the cause, future research is needed to determine if vaccination rates increase with a clinic champion to encourage HCP and assist with immunizations. Additionally, with patient refusals, documenting whether or not the patient had already received the influenza vaccination from another clinic. This would help with identifying more clearly those that are refusing versus those that had already received the influenza immunization from another source.

While this project did significantly increase influenza immunization rates in a high-risk clinic, it falls short of the 70% goal of Healthy People 2020. There is an urgent need for more adequate influenza coverage especially within high-risk populations. It was found that implementing this evidence based interventions significantly increased vaccination rates, however; further innovative research is needed to increase immunization rates to meet the goals of Healthy People 2020.

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